

Formula of the invention.

1. A device for small-angle computerized tomography, containing a source of penetrating radiation, a collimator, forming the radiation flow falling on the object in the form of one or several narrow, low-expanding at least in one direction, beams, a coordinate-sensitive detector performing the registration of coherent radiation scattered on small angles, a system for relative displacement of the complex "source - collimator - detector" and the object, and a computerized system for processing the information obtained from the coordinate-sensitive detector, differing by a spatial filter put between the object and the coordinate-sensitive detector and separating the radiation scattered by the object on ultra-small angles relatively to the direction of the falling beam.

2. A device ^{according to claim 1} in p. 1, differing by a collimator executed in the form of a regular periodical structure with radiation-transparent slit-like or channel-like areas alternating with opaque areas and overlapping a separate stripe in the object projection; the spatial filter represents a collimator-like regular periodical structure, in which the areas corresponding to the transparent areas of the collimator, are made from a radiation-opaque material, and the areas overlapping opaque areas of the collimator, are made transparent for penetrating radiation; on opaque areas of the filter there are detective elements for the measurement of radiation passed through the object; with this the sizes of the channels or the slits and the periodical structures of the collimators must provide the registration of the radiation scattered on ultra-small angles, by the position-sensitive detector.

3. A device ^{according to claim 1} in p. 1, differing by a collimator executed in the form of a regular periodical structure with radiation-transparent slit-like or channel-like areas alternating with opaque areas and overlapping a separate stripe in the object projection; the spatial filter is situated in front of the detector and represents a collimator-like regular periodical structure, in which the areas overlapping opaque areas of the collimator, are made transparent for penetrating radiation, and the areas overlapping transparent areas of the collimator are made of the material, which partially absorbs the radiation and decreases the intensity of the radiation passed through those areas to the level of the radiation scattered

on small angles and passed on the coordinate-sensitive detector through transparent areas of the spatial filter.

4. A device for small angle computerized tomography, containing a source of penetrating radiation, a collimator forming the radiation flow falling on the object in the form of one or several narrow, low-expanding, at least in one direction beams, a detecting system, a system a system for relative displacement of the complex "source - collimator - detector" and the object, and a computerized system for processing the information obtained from the coordinate-sensitive detector, installed at such a distance from the object and having such spatial sensitivity, which allows to register angled distribution of the intensity on the section of the beam passed through the object with spatial resolution which is more narrow, than the semi-width of the intensity distribution in the beam in the registration plane; with this each beam in formed by the collimator in the object projection is, at least in one direction, more narrow than the area occupied by the controlled substance within the object.

5. A device for small angle computerized tomography containing a source of penetrating radiation, a collimator forming the radiation flow falling on the object in the form of one or several narrow, low-expanding, at least in one direction beams, a detecting system, a system a system for relative displacement of the complex "source - collimator - detector" and the object, and a computerized system for processing the information obtained from the coordinate-sensitive detector, differing by a collimator representing a slit-like structure, forming a set of narrow, low-expanding beams of radiation in the direction of the investigated object; the registration of the radiation passed through the object is made by the bi-coordinate space-sensitive detector and a block for information processing connected with the detector; with this the period of multi-slit structure is chosen based on the condition of providing a period of spatial modulation of the radiation which is at least by two times smaller than the size of the area, occupied by the controlled substance within the object, and the spatial resolution of the detector is smaller than the period of spatial modulation of the radiation in the registration plane.

6. The device ^{according to claim 1} ~~in one of the pp. 1-5~~, differing by each beam overlapping the whole investigated area of the object in one direction, with this the complex "source - collimator

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- detector" is executed with the possibility of performing a 360° rotation relatively to the investigated object in the plane perpendicular to the plane of the fan-shaped beam.

9 7. A device ^{according to claim 1} ~~in one of the pp. 1-5~~, differing by the complex "source - collimator - beam" executed with the possibility of spiral displacement relatively to the investigated object.

9 8. A device ^{according to claim 1} ~~in one of the pp. 1-5~~, differing by the collimator forming a beam with point-shaped or a hachure-shaped section, with this the complex "source - collimator - detector" is executed with the possibility of displacement in complex trajectory laying on the surface of a sphere situated around the investigated area of the object.

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